
IBM iSCSI client for Windows NT and Windows 2000 installation and configuration instructions

The iSCSI client for Windows allows Microsoft® Windows NT and Microsoft Windows 2000 computers to access storage over an IP network. The iSCSI client (as an iSCSI initiator) issues SCSI commands to the IBM TotalStorage IP Storage 200i (an iSCSI target) according to the IETF-defined protocol for IP storage. (Refer to www.ietf.org for more information about the IETF-defined protocol for IP storage.)

The iSCSI client for Windows uses standard Windows NT and Windows 2000 network services to connect to remote iSCSI targets. The iSCSI targets are specified using the iSCSI client for Windows Configuration Utility, which exists as a taskbar status icon (usually in the lower-right corner of the Windows desktop and otherwise known as the system tray). The iSCSI client for Windows uses a standard SCSI miniport driver to interface with Windows. When the iSCSI client for Windows is successfully connected to an iSCSI target device, disks assigned to the iSCSI client appear as a physical disk. Operation that you can normally perform on a physical SCSI disk can be performed on an iSCSI disk. Currently, you cannot boot to an iSCSI disk; instead, the iSCSI disk is used for storage after the computer is booted.

Prerequisites

The minimum hardware and software requirements for the iSCSI client for Microsoft Windows NT® or Windows® 2000 are:

- 100-Mbps or Gigabit Ethernet connection (Gigabit Ethernet is recommended.)
- Local boot disk
- Windows NT 4.0 with service pack 6 or higher, or Windows 2000 with service pack 1 or later

Note: You do not need small computer system interface (SCSI)-controller hardware. The iSCSI client works independently of the SCSI-controller hardware that you might already have installed in your machine.

The iSCSI client is not supported on beta-level Microsoft operating systems, including Windows XP (Whistler).

An iSCSI disk is not bootable. You must have a local boot disk.

Installing the iSCSI client

To install and set up the iSCSI client:

1. Download the latest iSCSI client code in a temporary directory.
2. Run **setup.exe**.
3. Follow the instructions in the installation utility that guide you through the installation.
4. Click **Yes** to reboot your machine.

Configuring the iSCSI client

Each iSCSI client maintains configuration information concerning the various targets that it can access. In Windows NT and Windows 2000, this configuration information is kept in the registry and is modified using the IBM iSCSI Client Configuration utility. From this utility, you are able to add and remove targets. You can specify up to 8 targets.

The system administrator will inform you when a new drive, or *virtual logical unit* (VLUN), is assigned to you on the target appliance.

Changes are saved and connections to new targets are established each time you click **Enter** on the IBM iSCSI Client Configuration utility. You must reboot to terminate connections to deleted targets.

Adding a target

Your system administrator will supply you with appropriate values for each field in the following instructions. To dynamically add a new target and initiate a connection with that target:

1. Right-click the IBM iSCSI Client icon  in the System Tray.
2. Select **IBM iSCSI Client Configuration** from the pop-up menu. The IBM iSCSI Client Configuration Utility window is displayed.

Note: You can also start the IBM iSCSI Client Configuration utility by double-clicking the IBM iSCSI Client icon.


3. Click **Add** to add a new target.
4. Type the Internet Protocol (IP) address or the host name of the target in the **IP Address** field.
5. Type the port number for the target machine in the **Port Number** field. The default port number is 47274.
6. Type your iSCSI client ID in the **Login ID** field.
7. Type your password in the **Password** field.
8. Click **Enter** to add the target.

The utility attempts to establish a connection with the target. If a connection is not established, verify your configuration settings and contact your system administrator. If an error appears stating that your login ID or password are incorrect, contact your system administrator. To correct your configuration settings, see "Modifying target settings" on page 3.

9. Click **Yes** to run the Disk Management utility.
10. Use the Disk Administrator (Windows NT) or Disk Management utility (Windows 2000) to configure the new drive (for example, to partition, format, or assign a drive letter). See the Windows help for information about using this utility.
11. Add multiple targets by repeating steps 3 through 10.
12. Click **Exit** to close the IBM iSCSI Client Configuration Utility window.
13. Click **Yes** to save the changes.

Removing a target

To remove and terminate the connection to a target:


1. Right-click on the IBM iSCSI Client icon  in the System Tray.
2. Select **IBM iSCSI Client Configuration** from the pop-up menu. The IBM iSCSI Client Configuration Utility window is displayed.

Note: You can also start the IBM iSCSI Client Configuration utility by double-clicking the IBM iSCSI Client icon.

3. Click the target you want to delete from the target list.
4. Click **Remove** to remove a target.
5. Click **OK** to verify the deletion.
6. Remove multiple targets by repeating steps 3 through 5.
7. Click **Exit** to close the IBM iSCSI Client Configuration Utility window.
8. Click **Yes** to save the changes.
9. Click **Yes** to reboot your machine and terminate the connection to the target machine.

Modifying target settings

To modify the login ID or password of a target:

1. Right-click on the IBM iSCSI Client icon  in the System Tray.
2. Select **IBM iSCSI Client Configuration** from the pop-up menu. The IBM iSCSI Client Configuration Utility window is displayed.

Note: You can also start the IBM iSCSI Client Configuration utility by double-clicking the IBM iSCSI Client icon.

3. Click **Edit** to modify the target settings.
4. Type your iSCSI client ID in the **Login ID** field.
5. Type your password in the **Password** field.
6. Click **Enter** to change the target settings.

The utility attempts to establish a connection with the target. If a connection is not established, verify your configuration settings and contact your system administrator. If an error appears stating that your login ID or password are incorrect, contact your system administrator. Then, repeat the steps in this procedure to correct the settings.

7. Click **Yes** to run the Disk Management utility.
8. Use the Disk Administrator (Windows NT) or Disk Management utility (Windows 2000) to configure the new drive (for example, to partition, format, or assign a drive letter). See the Windows help for information about using this utility.
9. Click **Exit** to close the IBM iSCSI Client Configuration Utility window.
10. Click **Yes** to save the changes.

Updating the iSCSI client

To update the iSCSI client code:

1. Download the latest iSCSI client code in a temporary directory.
2. Run **update.exe**.
3. Follow the instructions on the screen to complete the update.
4. Click **Yes** to reboot your machine and terminate all connections.

Uninstalling the iSCSI client

To uninstall the iSCSI client:

1. Select **Start** → **Settings** → **Control Panel**.
2. Double-click **Add/Remove Programs**.
3. Click **IBM iSCSI Client for Windows**.
4. Click **Remove**.
5. Click **Yes** to verify the uninstallation.
6. Click **Yes** to reboot your machine and terminate all connections.

Verifying the product version information

The version number of the iSCSI client for Windows can be identified by right-clicking the **iSCSI client** taskbar status icon and then clicking **About IBMiSCSI** from the pop-up menu.

Starting the iSCSI client

The iSCSI client starts automatically when you boot your machine. Connections to configured targets are also established, and drives are reattached with the same drive letters.

Frequently asked questions

1. **When I enter my target's configuration information and click Enter, a message appears that the target rejected my login attempt. What went wrong?**

This message could indicate one or more of the following problems:

- Most commonly, there is a discrepancy between the login information configured at the target end and at the client end. Double check your login ID and password, remembering that they are case sensitive.
- The target device is at capacity, in which case no new client sessions are accepted. Contact your system administrator for help resolving problems with login rejections.

2. **When I enter my target's configuration information and click Enter, a message appears that the target could not be connected to. What went wrong?**

This message could indicate one or more of the following problems:

- The specified IP address or host name is not an iSCSI target device.
- The specified target device might not be turned on.
- A network problem could be preventing you from accessing the target device. Check your network connection and try to ping the target. Contact your system administrator for help resolving connectivity problems.

3. **How do I rescan for disks on targets that I already have configured?**

Right-click on the **IBM iSCSI** taskbar status icon, and click **Rescan for iSCSI targets and Disks** from the pop-up menu. This menu option is useful to search for any disks on targets that might not have been available when your computer first booted or to search for any newly-exported disks on existing targets.

4. **What happens to my iSCSI disks if my network becomes inaccessible?**

To iSCSI disks, network problems are equivalent to removing the SCSI cable from a *real* SCSI disk. In other words, all data transfer between the iSCSI client and the target stops until network connectivity is restored. The most common symptom is error messages from your applications that indicate lost data. For this reason, it is advised to run the iSCSI client over high-availability and high-quality networks.

5. **I'm using an iSCSI disk to store an Oracle or DB/2 database, and the database application gives an error if it is started automatically after rebooting the computer. What is wrong?**

The iSCSI client is a driver service that starts automatically after the computer boots. Because it depends on TCP/IP and Ethernet device drivers to be loaded first, the iSCSI client cannot start as early in the boot process as other SCSI drivers. It is possible for other services that depend on iSCSI to be started too soon. Such services or applications must be identified, and steps must be taken to start them after ensuring the iSCSI client is started first. You can use the Event Viewer to identify any problems. The Windows 2000 resource kit provides a utility, AutoExNt, that can be used to solve problems caused by service dependencies. Consult the Windows 2000 Resource Kit documentation for additional information.

6. **I set some sharing properties on my iSCSI disk, and they disappeared after rebooting. What is wrong?**

Currently, sharing properties cannot be restored to iSCSI disks automatically because the Microsoft Lanman Server service is started before the iSCSI client. Therefore, sharing properties must be restored manually. To do this, it is advisable to write a script to add the shares each time the computer is rebooted. Another option would be to stop the Lanman Server service and restart it (enter **net stop server** and **net start server** from the command prompt) each time after you boot the computer. Another option would be to use the Windows 2000 Resource Kit utility AutoExNt to automate stopping and starting the necessary services. Consult the Windows 2000 Resource Kit documentation for additional information.

7. **Why won't the iSCSI client for Windows connect to iSCSI target devices provided by other companies?**

The IETF iSCSI specification currently is not ratified. Because the specification is still changing, it is not possible to guarantee interoperability among different vendors.

8. **On Windows 2000, my iSCSI disk is not automatically restored after rebooting. Why not?**

You have created a dynamic disk on the iSCSI drive. According to Microsoft, dynamic disks cannot be restored automatically on iSCSI drives because of how iSCSI works (the drives are not available until late in the boot process). Dynamic disks must be manually restored by reactivating them using the Disk Management tool. For this reason, it is recommended that you use only Basic Disks on iSCSI drives. Consult the Windows 2000 documentation for Basic Disks versus Dynamic Disks for an explanation of the differences between these two types of disks.

9. **On Windows 2000, I configured my iSCSI disk for the first time and the computer asked me to reboot. After rebooting, my configuration was lost. What went wrong? (And why was the reboot necessary anyway).**

The configuration was not saved prior to the computer rebooting. Before rebooting the computer, be sure to save your configuration by exiting the IBM iSCSI Configuration Utility. The reboot was necessary because, in some cases, Windows 2000 is not able to dynamically configure the new disk. This is a limitation of Windows 2000 and only occurs when the iSCSI client for Windows is configured for the first time.

10. **After installing the IBM iSCSI Client for Windows, a new device appears in Device Manager called "SCSI/RAID Host Controller". What is it?**

This is the IBM iSCSI device driver. It is needed to provide the iSCSI driver services. Do not delete this device or iSCSI will not work on your computer.

Troubleshooting

The iSCSI client uses Window's Event Viewer to log messages. To view iSCSI client messages:

- Windows NT
 1. Click **Start** → **Programs** → **Administrative Tools** → **Event Viewer**.
 2. Double-click any message with a source of "IBMiSCSI" to display more details about the message.
- Windows 2000
 1. Click **Start** → **Settings** → **Control Panel**.
 2. Double-click **Administrative Tools**.
 3. Double-click **Event Viewer**.
 4. Double-click any message with a source of "IBMiSCSI" to display more details about the message.

The following table describes various error conditions that can occur when using the iSCSI client and recommended actions.

Table 1. Troubleshooting symptoms and recommended actions

Symptom	Recommended actions
Adding a target failed.	<ol style="list-style-type: none"> 1. Verify that the target machine is connected to the network by typing the following command from a command line and pressing Enter: ping IPAddress where <i>IPAddress</i> is the IP address of the target. 2. Verify that the target configuration is correct. 3. Contact your system administrator to verify the target is up and running.
Removing a target failed.	<ol style="list-style-type: none"> 1. Verify that no applications are using the drives on the target machine.

Table 1. Troubleshooting symptoms and recommended actions (continued)

<p>You cannot access an iSCSI drive.</p>	<ol style="list-style-type: none"> 1. Verify that the target is configured correctly. 2. Verify that the drive is listed under Disk Drives in the Device Manager. 3. Verify that the network connection with the target machine by typing the following command from a command line and pressing Enter: ping IPAddress <p style="margin-left: 40px;">where <i>IPAddress</i> is the IP address of the target machine.</p> <ol style="list-style-type: none"> 4. Verify that the target is up and running. 5. Attempt to reconnect to the drive: <ol style="list-style-type: none"> a. Right-click the iSCSI client icon. b. Click Rescan for iSCSI Targets and Disks from the pop-up menu. 6. Contact your system administrator.
<p>The target is down.</p>	<ol style="list-style-type: none"> 1. Contact your system administrator. 2. When the target is brought back up, attempt to reconnect to the drive: <ol style="list-style-type: none"> a. Right-click the iSCSI client icon. b. Click Rescan for iSCSI Targets and Disks from the pop-up menu.